

PARASITISM IN PAPAIPEMA PURPURIFASCIA.

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On July 4, 1927, near Bristol, Indiana, a diligent search was made for *P. purpurifascia*, in the roots of Columbine, with no success. In 1928 on the same date the results were the same. In 1929, on July 4, two infested plants were found with vacated galleries.

On July 4, 1930, a healthy Columbine plant was almost rare. In about two hours work 54 larvae of *P. purpurifascia* were collected. Many vacant galleries were found and many plants were completely killed. It took longer to collect good roots for transferring the larvae than to collect the larvae.

These 54 larvae continued to eat for a few days but not as voraciously as is characteristic of the species. This was indicated by the small amount of frass, though the plants in which they were found were completely gutted. Thinking that the larvae had pupated when eating indications ceased, no attention was given them until July 10, when a cluster of parasite cocoons developed near the entrance of one of the galleries. Investigation soon disclosed that 53 of the larvae were parasitized. Only one pupated. After the formation of the parasite cocoons the larvae were still alive, though greatly reduced in length and about two-thirds of their original thickness. The first one died on July 16 and the last on the 21st. The imago from this one pupa fouled its right wings in a slit of the pupa and was unfit for mounting. Results: Interesting study. Specimens, none.

In 1931, on July 4, no larvae were found. Not even an infested plant. In 1932 search again was made. This time on June 8, when a heavy rain stopped operations after four larvae were collected. Then again on July 4 after a half day's work seven larvae were taken. One of the four taken June 8 was tightly pinched in a tiny hole through the tip of the root through which it tried to force its way. This larva was very weak when found, refused to eat in a new gallery, and died two days later. The other three left the galleries, one on June 22 and the other two on June 25. Only one of these three ate to any great extent. Of the seven taken on July 4 all were parasitized again. Those of June 8 pupated and emerged in due time.

It appears that parasitism prolongs the life of the larva and they live beyond their regular pupation period. Of the 61 larvae taken in two different years, 60 were parasitized. From the meager one-year data it would appear that pupation takes place about the third week in June in this locality. The question is: When does parasitization take place?